

Claims

5 1. A paging control method for a mobile communication network to which at least two non-coordinated core networks are connected, comprising the steps of:

10 a) checking a service state of a mobile station; when a request for a paging message to said mobile station has been received from one of said non-coordinated core networks; and

15 b) transmitting a multicall paging message using an existing signaling link and/or mobile station location information known in a radio access network, when said mobile station is already connected to another one of said non-coordinated core networks.

20 2. A paging control method according to claim 1, wherein said checking step is performed by a radio network controller of said mobile communication network by determining whether said mobile station has already a connection, wherein a normal paging operation by using a paging channel is performed, when the mobile station has no connection.

25 3. A paging control method according to claim 1 or 2, wherein said multicall paging message is transmitted on a channel selected in accordance with the service state of said mobile station.

30 4. A paging control method according to claim 3, wherein said multicall paging message is transmitted on a dedicated channel, when said mobile station is in a dedicated channel active state.

35 5. A paging control method according to claim 4, wherein said multicall paging message contains an information

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defining a requested bearer, a page mode and a core network identification.

6. A paging control method according to claim 3, wherein
5 said multicall paging message is transmitted on an FACH
channel, when said mobile station is in an RACH/FACH state.

7. A paging control method according to claim 6, wherein
10 said multicall paging message includes an information
defining a requested bearer, a core network identification
and a page mode.

8. A paging control method according to claims 7, wherein
15 said multicall paging message includes an information
defining a dedicated channel which said mobile station has
to start using for signaling.

9. A paging control method according to claim 3, wherein
20 said multicall paging message is transmitted on a PCH
channel, when the mobile station is in an RACH/PCH state.

10. A paging control method according to claim 9, wherein
25 said multicall paging message includes an information
defining a requested bearer, a core network identification
and a radio network temporary identity.

11. A paging control method according to claim 5, 7 or 10,
wherein said mobile station checks a possibility of
30 creating the requested bearer and responds with a multicall
paging response message comprising an information as to
whether the requested bearer can be created, or not, and an
appropriate protocol information.

12. A paging control apparatus for a mobile communication
35 network to which at least two non-coordinated core networks
(5, 6) are connected, comprising:

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a) means (3) for checking a service state of a mobile station (1), when a request for a paging message to said mobile station (1) has been received from one said of non-coordinated core networks (5, 6); and

5 b) means (3) for transmitting a multicall paging message using an existing signaling link and/or mobile station location information known in a radio access network, when said mobile station is already connected to another one of said non-coordinated core networks.

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13. A paging control apparatus according to claim 12, wherein said paging control apparatus comprises a radio network controller (3) of said mobile communication system.

15 14. A paging control apparatus according to claim 12 or 13, wherein said non-coordinated core networks comprise a GSM-GPRS core network with no Gs interface between a Mobile Switching Center (5) and a Serving GPRS Support Node (6).

20 15. A paging control apparatus according to one of claims 12 to 14, wherein said mobile communication network comprises a GSM network.

16. A paging control apparatus according to one of claims 25 12 to 15, wherein said non-coordinated core networks comprise a GSM network, a GPRS network, a GSM based UMTS, a GPRS based UMTS or any other circuit- and/or packet-switched core network nodes.

30 17. A paging control apparatus according to claim 16, wherein said one of said non-coordinated core networks comprises a mobile switching center (5) and wherein said other one of said non-coordinated core networks comprises a Serving GPRS Support Node (6), or vice versa.

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18. A paging control apparatus according to claim 17, wherein said mobile switching center is a GSM based UMTS mobile switching center and wherein said Serving GPRS Support Node is a GPRS based UMTS SGSN.